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THE POPULAR HUXLEY.

Thomas Henry Huxley. By Edward Clodd. Pp. xiii + 226. (Edinburgh and London: William Blackwood and Sons, 1902.) Price 2s. 6d.

DR. RICHARD GARNETT has described Huxley's work as "that of the populariser; the man who makes few original contributions to science or thought, but states the discoveries of others better than they could have stated them themselves." I am disposed to think that the picture my friend Mr. Clodd has drawn with practised dexterity will rather confirm than dissipate this inadequate judgment. On the last page of this volume he writes, with perhaps a touch of remorse:—"To regard Huxley as a compound of Boanerges and Iconoclast is to show entire misapprehension of the aims which inspired his labours." I entirely agree; but the words might have been added to the title-page without doing serious injustice to what follows.

With such a Huxley I must frankly confess I have very little sympathy. I prefer the one which, with much critical insight, Mr. Chalmers Mitchell has presented to us "in his admirable monograph."

Huxley was so big a man in my judgment that his real merits can well afford to bear the brunt of dispassionate criticism. Disagreeing as I do with Dr. Garnett, I go farther, and think that as a "populariser" Huxley was by no means always successful. And Mr. Clodd supplies the reason in "that passion for logical symmetry" which appears to me often Huxley's besetting sin.

I only echo the opinion of competent judges in saying that he will be always clearly recognised as occupying a foremost place amongst English scientific men of the nineteenth century. He rescued animal morphology from the deductive method, and firmly established it on an inductive basis. In doing this there is scarcely any part of the animal kingdom which he did not illuminate by original and brilliant work. And he applied the theory of evolution with masterly insight to the explanation of the facts. All this was, however, only accomplished in the most cautious way, and was the result of patient observation and study. An examination of his published researches will show that he never advanced a step without making the ground firm beneath his feet.

In his more popular writings I am bound to say that I often fail to find the same qualities. Facts and knowledge were taken frequently at second hand, and were not the acquisition of his own personal labour. No one can deny the literary skill with which they were used. But the habit which grew upon him of pushing home remorselessly the conclusions he drew from them often landed him in very dubious positions. This is the more singular as he saw the danger in the case of mathematical reasoning, and rightly insisted that "what you get out depends on what you put in."

Huxley was firmly imbued with what is ordinarily called a "materialistic" conception of the universe. I think myself that this is probably a true view, though I confess I am getting rather at sea about "electrons"

and "ions." Nor am I at all disposed to agree with Principal Rücker that atoms are more than a physical hypothesis. I do not admit that Prof. "Britschli" has produced "a substance which simulates protoplasm" or has done more than give us some pretty examples of surface tension. I do not see even the beginning of a materialistic theory of protoplasm. This, however, was what Huxley attempted in the lecture on the "Physical Basis of Life," of which I see a cheap reprint is about to be issued. Mr. Clodd summarises it as if its contents were accepted scientific truths. But this is far from being the case, and I should myself be in great difficulty if they were presented to me in the examination room.

Huxley—to take only one out of many disputable assertions—after speaking of "the dull vital actions of a fungus," states that its "protoplasm is essentially identical with and most readily converted into that of any animal." Further on he puts the idea into a more picturesque form and speaks of "transubstantiating mutton into man." Except the definition of a crab attributed to the French Academy, I call to mind no statement so compact of error. Every physiologist knows that between the protoplasm of a sheep and that of the human being who consumes it there is a whole series of compounds which bear no resemblance to protoplasm at all. The animal has to build itself up from lifeless matter just as the plant has, only it mostly uses more complex molecules. It is no doubt true that a particle of fungoid differs in no appreciable physical respect from one of human protoplasm, yet the former will never emerge from the fate of the humble mushroom, while the other may be instinct with the thoughts of a Prime Minister. It may be that the difference is a function of molecular arrangement. If so it is of an order entirely different from anything chemistry presents us with. The fact is that protoplasm is not in any intelligible sense of the word a substance at all, but rather a structure or mechanism. Huxley puts this clearly enough later on in a letter to Herbert Spencer ("Life," i. 127).

Huxley's theological writings seem to me to exhibit defects of the same kind. He did not invent biblical criticism, though one might almost imagine from Mr. Clodd that he did. The argument seems to be this: read the Bible as if it were the *Times* newspaper; then ask yourself the question—Can I accept the statements of the one as literally as of the other? The answer of most persons will be, No. Very well then, Huxley replies:—You are in this position: Christianity is based on the Bible, and my sense of veracity compels me to say that it "vanishes" ("Life," ii. 212), or at any rate "is doomed to fall" ("Essays," v. 142), and some other "hypostasis of men's hopes" will take its place (*l. c.* 254).

But I fail to see the validity of the conclusion. Huxley's analysis of orthodox Christianity is that it is a "varying compound of some of the best and some of the worst elements of Paganism and Judaism, moulded in practice by the innate character of certain people of the western world" ("Essays," v. 142). Without discussing this, it clearly represents Christianity as a product of evolution. There will be, therefore, no new hypostasis necessarily; the moulding will go on and there will be fresh adjustments, as there have been in the past, to higher ethical demands.

I confess I hoped to find in Mr. Clodd's book what I have entirely failed to construct for myself, a consistent and systematic summary of Huxley's teaching in these matters. That he has not succeeded convinces me that the thing is impossible. Huxley's position was avowedly negative; he had no illusions on the subject ("Life," ii. 301). Mr. Clodd says that he "asked the churches to revive" the creed of Micah. I fail to find the passage, or that he did more than recommend that creed as a "work of art." Two years later he wrote:—"That there is no evidence of the existence of such a being as the God of the theologians is true enough" ("Life," ii. 162).

The fact is—and I think Mr. Clodd has failed to bring it out clearly—Huxley's theological and ethical writings are not a gospel, but the revelation of the working of a nature of singular complexity. A heart of warm emotion was in perpetual conflict with an intellect which strove to be the "clear cold logic engine" which he so much desired ("Life," i. 198). The late R. H. Hutton, who often showed real insight, hit the mark when he said that Huxley's "slender definite creed in no respect represented the cravings of his large nature," and there was more than sly humour in Bishop Thirlwall's remark on the presence at the Metaphysical Society of "Archbishop Huxley and Prof. Manning." The man's real catholicity of temperament endeared him to his friends and overbore the effect of his cold logic and often petulant agnosticism.

In dealing with biblical or any other ancient documents it is not sufficient to dismiss them because their literal accuracy cannot be sustained. The scientific problem is to ascertain how they came to be evolved by mankind and what is the true meaning behind them. This Huxley rarely did, and in consequence laid himself open to the reproach attributed to Jowett that "he did not consider the literature." Huxley said "the story of the Deluge is a pure fiction" ("Essays," iv. 234). But it occurs in Babylonian literature, and he subsequently followed Suess in giving what is probably its true explanation (*L. c.* 247). He gave himself an excellent example of the true method in his analysis of "the account of Saul's necromantic expedition," which he thought "quite consistent with probability" ("Essays," iv. 291), and he defines in the same essay with luminous precision what may be described as the method of biblical palaeontology (*L. c.* 290).

It seems to me that it would be a mistake to take Huxley's theology too seriously. It was essentially an intellectual product and not a working system. Thus he took "the conception of necessity to have a logical and not a physical foundation" ("Life," i. 412). He was above all things masculine and human. In re-reading his "Life and Letters," I am struck with the sanity of his judgments on administrative and political questions. To whatever extreme he pushed his logical conclusions in reasoning, when it came to "business" he was essentially practical. He raised many important questions. That is easy enough even for men of smaller intellectual calibre. What he did with them is that which really interests us. The ethical problem is the one of greatest actual importance. His fundamental position as regards this was a divorce between theology and ethics. "The end of the evolution of theology will be like its beginning—it

will cease to have any relation to ethics" ("Essays," iv. 371, 372). But the practical difficulty at once occurred to him—How is the dense mass of human action to be influenced by an appeal to abstract principles? Here is his answer:—"I must confess I have been . . . seriously perplexed to know by what practical measures the religious feeling, which is the essential basis of conduct, was to be kept up, in the present utterly chaotic state of opinion on these matters, without the use of the Bible. The Pagan moralists lack life and colour, and even the noble Stoic, Marcus Antonius, is too high and refined for an ordinary child" ("Essays," iii. 397). "Life and colour"—there you have the problem in a nutshell. When it came to the question of Board School education, he fought for the Bible. According to Mr. Clodd (p. 37), shortly before his death he regretted this, and "came to see" that it was "deplorable." But in 1894 he did "not repent . . . in the least" ("Life," ii. 383), and as to the "highest biblical ideal," he wrote in 1897, "I do believe that the human race is not yet, possibly never will be, in a position to dispense with it" ("Essays," v. 58).

Meanwhile it is interesting to note that he had tried various other solutions. One was obedience to natural law, an old-fashioned precept which traces back to Kingsley and farther:—"The safety of morality lies in . . . a real and living belief in that fixed order of nature which sends social disorganisation upon the track of immorality, as surely as it sends physical disease after physical trespasses" ("Essays," ix. 146).

But the "colour" question was insistent, as it must be, and so the moral sense was identified with "an innate sense of moral beauty" ("Life," ii. 305). This was compared with the aesthetic sense, and as with that ("Essays," ix. 80), "evolution accounts for morality" ("Life," ii. 360). This was an intuitional theory which was finally replaced by one that was practically utilitarian. "Of moral purpose I see no trace in nature. That is an article of exclusive human manufacture" ("Life," ii. 268). Mr. Clodd will save me the trouble of enforcing the position by further citations. "The terms 'good' and 'evil' have no meaning till communal life begins. Where there is no society there is no sin. A solitary man on an uninhabited island can do no wrong" (p. 284). I believe it is a moot point whether political economy can exist on an island with two inhabitants. But it seems a little harsh when there is only one to deprive him of such consolation as he may derive from his "innate sense of moral beauty" and bring him down without appeal to the level of the beasts that perish.

The Romanes lecture, which Mr. Clodd admires so much, to me is pathetic, because it is a sort of cry of despair. The cosmic order which we were formerly exhorted to conform to is identified with evil, and this is to be strenuously combated by the ethical principle. But the conflict will be unavailing, and the cosmic order will resume its sway. So after traversing the whole field of ethical exploration we are finally thrown into the arms of Schopenhauer. All this is intensely interesting to anyone who cares for such problems or for the working of a remarkable mind. But helpful or constructive I distinctly say that it is not. I turn to Mr. Clodd and find that he extracts from it "a religion that, coordinated with the needs and aspirations of human nature, would

find its brightest motive and its permanency in an ethic based on sympathy."

Sympathy may explain the altruistic aspect of morality ; but I fail to see how it accounts for the "renunciation" of the lower impulses which is characteristic of the highest ethical development. And how for practical purposes is "sympathy" to be infused ? My experience of human nature inclines me to think that it requires a more powerful appeal to the imagination than is afforded by a mere academic counsel of perfection of this sort. As I am writing these lines my eye falls on a speech in the daily paper by Viscount Goschen. I quote the following :—

"As a layman he wished, on behalf of the laymen, to express their admiration of the work which was being carried on, and which the clergy were doing in the East-end of London. Thirty years ago, when he was at the Poor Law Board, he made a special study of the statistics of poverty, ignorance and crime at the East-end, and he learned that the miserable breakages of civilisation resorted in their deepest despair to Bethnal Green, and hid themselves there amongst the very poor."

If we dispense with the clergy, have we at present any effective agency for dealing with this sort of problem ? I see none, and I am firmly persuaded that no abstract principles would have prevented Huxley substantially agreeing with Lord Goschen.

Mr. Clodd frames a severe indictment against the theology of the last century. It did not lift its voice against the excessive use of capital punishment. I confess I do not see where theology comes in ; it is a question of purely civil policy. Sentimentalism apart, the free use of hanging is scientifically arguable. Huxley thought that for "moral cripples and idiots . . . there is nothing but shutting up and extirpation" ("Life," ii. 306). Mr. Clodd complains that theology "still wages bitter war to enforce the teaching of her discredited dogmas ; and, to her even greater shame, fans and fosters the spirit of militarism." This would be all very well in a secularist pamphlet, but I fail to see its place in a life of Huxley, even if I thought it just. Huxley's views about the Afghans ("Life," i. 489) show that, right or wrong, he was not wanting in the virile instinct of the normal Englishman.

From my point of view, which is that of a thorough-going evolutionist, I hold it unscientific to array one plane of theology against another which demands a higher ethical standard in practice. It would be as reasonable to complain that *Amphioxus* was unable to take advantage of a Board School education. If we agree with Huxley that theology is "a natural product of the operations of the human mind" ("Essays," iv. 288), Mr. Clodd is simply pointing his sword to his own breast.

Huxley was so transparently honest that no prejudice would blind his eyes to the merit of any agency that made for good, however sceptical he might be as to the basis on which it rested. Orthodoxy could not desire a more touching appreciation than his of "the bright side of Christianity" ("Essays," v. 254). He had even a good word to say of Roman Catholicism in the past ("Life," i. 346). He was deeply impressed with the life of Catherine of Siena. Whatever may have been his own intellectual convictions, life still remained to him "a

hopeless riddle" ("Life," ii. 134). That is the utmost positive outcome I can derive from his ethical teaching, and I do not see that Mr. Clodd carries us farther.

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A MONOGRAPH OF MOSQUITOES.

A Monograph of the Culicidae of the World. By F. W. Theobald, M.A., F.E.S. 3 vols. Pp. xxvi+815 ; 42 plates. (London : Trustees of the British Museum.) Price 3*l.* 3*s.*

THIS work has been undertaken chiefly with the object of enabling "medical men engaged in tracing the connection between mosquitoes and human disease to identify and speak with precision of the species implicated." A considerable knowledge of the principles of entomology has now become a necessity in such investigations, and the present work forms an excellent guide and help in the processes of identification.

The work in three volumes, of which the last consists entirely of coloured plates, has an introduction containing notes on the mounting of mosquitoes, in which the author strongly urges the necessity of preserving specimens in 40 per cent. spirit for purposes of more complete identification. The first portion of the work is devoted to a short account of the external structure of the adult, pupal and larval conditions of the insects and of the bionomics of the different stages, and ends with a synoptic table of subfamilies and genera of the family of Culicidae and a list of species of Culicidae, and a further list arranged according to the countries in which the species occur.

The rest of the work deals with detailed descriptions of the members of the different genera. It is lavishly illustrated by many figures throughout the text, which serve to lighten very considerably the difficult task of identification. The coloured plates forming the third volume have been exceedingly well prepared, and their execution must have absorbed much time and labour. It is, however, much to be regretted that many of the drawings, in fact almost all those of insects collected in tropical countries, have been made from preserved specimens, and consequently do not reproduce at all exactly the colours of the insects in nature. It is well known how quickly their delicate colours fade after death and under the influence of the usually employed preservatives, so much so, indeed, that to investigators who are very familiar with the insects in their tropical surroundings the coloured representations in this work appear very untrue.

Without in any way wishing to detract from the great value of the portion of the book which details the specific characteristics of the numerous species described, it is to be regretted that the earlier portion, dealing chiefly with the bionomics of the Culicidae, and for which the author has been largely dependent for his information on the authority of others who have studied the insects in the tropics, should occupy such a prominent position. In the short description of the parts of the proboscis of the mosquito, the author has shown himself unfamiliar with the minuter details of its structure. He advises the